

INSTALLATION

I. Support Requirements

A. Cooling

1) Anode Water

High-purity water should be used in conjunction with a suitable voltage-holdoff coil of hoses. The minimum water-flow required is 20 gpm at less than 50-deg. C inlet temperature. Pressure drop may vary from approximately 60 psi to 160 psi, depending on whether quick-disconnect fittings are used on the hose connections to the anode-cooling jacket.

2) Stem Air

Approximately 110 cfm at 3.25 inches of water column is required at the inlet on the bottom of the cabinet. A suitable blower is the Rotron "centrimax" No. CX33A33C used with a short run of smooth hose or tubing.

B. Power

- 1) In addition to the anode, grid, and screen requirements listed on the specification sheet, 120 VAC at 3.1A is required to run the output-cavity blower and the motor power supply. All DC power supplies use conventional grounding.

C. Protection

- 1) A safety-interlock switch is provided on the front panel. Additional interlocks in the system should include water flow, air flow, water over-temperature, and HV crowbar firing. Anode-current, screen-current and grid-current overloads should also be included in the interlock string.

Provision should be made in the interlock system to remove or divert RF drive immediately in the event of an interlock trip. By the same token, it should be made impossible to apply RF drive unless all electrode voltages are present.

The use of an electronic crowbar in the anode circuit is recommended.

D. Operating Instructions

1) Stability

Neutralization is unnecessary because of the grounded-grid (for RF) circuit. L-Band oscillations (circular mode within the tube) are effectively suppressed by the eccosorb necklace (see Tube Installation).

2) Preliminary Checks

Insure the presence of anode-cooling water, cavity air, stem air, and load cooling.

3) Proper Sequencing of Voltages and Drive

- a) On Start-up:
 - 1. Filament Voltage
 - 2. Grid Bias Voltage
 - 3. Anode Voltage
 - 4. Screen Voltage
 - 5. Driving Power
- b) On Shut-down Reverse the above sequence or shut off all simultaneously.

4) Tuning-up

a) Input Circuit

There is interaction between the input tuning and input matching controls. They have to be "walked" up and down together when changing frequency. When matched for full power the match will be poor at low power levels. This is normal and can be ignored.

By proper adjustment the input circuit is capable of providing a very good match over a wide range of power levels. For best matching the input controls should be touched up after plate tuning and loading are completed and drive level is established.

b) Output Circuit

The plate circuit can be tuned to resonance by observing a peak in output power or a peak in screen current. These two peaks should occur at the same tuning position.

c) Loading

Heavy loading reduces screen current. A large change in loading (loop position) may require a small change in plate tuning. Operating conditions, in general, are not critical. The Factory Test Data are not necessarily optimum, but rather a good Class-B compromise between gain and efficiency.

II Mounting

- A. The CV-2232A cavity is designed to mount in a standard 24-inch wide rack. During tube changing the "stack" (plate line) will protrude 17 inches above the top of the cabinet. At least 6 inches of vertical clearance should be provided beneath the cabinet for the air-hose elbow and hand access to the EMI filter-hole.

The plate line with blocker weighs 66 lbs. The cavity cabinet without the plate line and blocker weighs 184 lbs. The total weight is 250 lbs. Four men easily can lift the cavity. A small hydraulic fork lift with padded forks is convenient to use when mounting the cabinet into the rack.

III. Cavity Assembly

A. Items Required for Installation

1. Overhead hoist or block and tackle.
2. Rope sling.
3. Socket wrench with 8-inch extension, 9/16-inch socket.
4. 5/64, 5/32, and 3/16-inch Allen wrenches.
5. 3/32-inch diameter pin or small allen wrench.
6. Phillips-head and blade-type screwdrivers.
7. Eccosorb necklace (EIMAC P/N B244849).
8. 12 x 12 x 1/2-inch thick plywood board.
9. 3 each 2 x 2 x 3/4-inch wooden blocks.

B. Installation of Plate-line Assembly

1. Remove front panel of cavity and slide clamp in ceiling of cabinet down over fingers.
2. Unbolt center-conductor contact-ring assembly from the plate-tuning shorting plate.
3. Raise plate short to top limit using front-panel switch.
4. Carefully stand plate-line assembly on the floor in front of the cavity. Support the plate-line assembly on the ceramic blocker using wooden blocks to prevent the weight of the plate-line assembly from resting on the copper fingers of the plate blocker.
5. Thread the rope sling through the top web of the plate line. Form a loop and tie securely.
6. Slide center-conductor collet down on plate-line assembly approximately 8 inches.
7. Pass the overhead hoist line with safety hook through cavity top-cover opening, and through the opening in the plate-line shorting plate. Pull the line and safety hook down and forward to the front and outside of the cavity. Attach hoist-line safety hook to the rope sling on plate-line assembly.

8. Carefully raise the plate-line assembly while holding and guiding it by the bottom (blocker end). Guide plate-line assembly so that it does not contact cavity input front panel. As plate-line assembly is raised allow rope-sling end to swing inside the cavity so that it is in line with the centerline of the cavity and the hoist. Continue to lift the plate-line assembly, holding it at an angle, and carefully guide it through the hole in the plate-line shorting plate until the bottom end can swing freely into the cavity. Use care not to bump the ceramic blocker or corona ring.
9. Place 12 x 12 x 1/2-inch plywood board over the cavity socket.
10. Carefully lower the plate-line assembly onto the 12 x 12 board. Use the 2 x 2 x 1/2-inch wooden blocks to support the blocker ceramic as in step 4.
11. Align the plate-line so that the letter "F" (marked between the two vertical in-line countersunk screws) faces forward toward the front panel of the cavity and is equidistant from the sides of the cabinet.
12. Lower the plate-line short, using the front-panel switch, approximately 9 inches so there is room to work on the center-conductor collet.
13. Carefully raise plate-line assembly through the top-plate clamp until the bottom of the blocker is approximately 22 inches from the socket deck.
14. Tighten top-plate clamp using a 5/32-inch allen wrench. Do not release lifting device at this time.
15. Align center-conductor collet and bolt it into place.

C. Tube Installation

1. 4CW100,000E Tetrode
 - a) Attach shroud-adapter ring (Dwg. B251428) and corona ring (DWG B154568) to upper and lower surfaces of anode flange, respectively.
 - b) Attach the anode water and quick-disconnect fittings.
 - c) Attach long HV connector (Dwg. 251431) to waterjacket stud.

- d) Attach socket-insertion assembly to bottom of tube using 5/64-inch Allen wrench. Screw set screws flush with top of clamp so that tube-socketing cross bar is captured mechanically.
- e) Install Eccosorb necklace on tube ceramic between control-grid and screen-grid contacts. Use short piece of Teflon tape to join ends.
- f) Place tube in socket. Be careful when threading the insertion assembly into the socket. Avoid bumping blocker-contact fingers with anode waterjacket quick-disconnect fittings.
- g) Align anode-water fittings parallel to the front panel.
- h) Remove air hose and EMI-filter assembly on bottom of cabinet.
- i) Reach up inside EMI-filter opening and locate 3/8-inch tube-clamp nut. This nut is located on the centerline of the socket and between two filament-choke bolts. Make sure that socket wrench is placed on tube-clamp nut, not on filament-choke bolt.
- j) Tighten tube-clamp nut until tube screen sealing ring contacts Teflon stops on top of socket. Use 9/16-inch socket with 8-inch extension.
- k) Connect anode water supply and return lines to waterjacket connectors. Be sure that the supply line is connected to the inlet and the return is connected to the outlet.
- l) Turn on anode water and check for leaks.
- m) Replace EMI-filter assembly on bottom of cabinet.
- n) Re-connect stem air hose to EMI filter.

2. Y567B Tetrode

- a) Attach shroud adapter ring (Dwg. C251320).
- b) Attach the anode-water and quick-disconnect fittings.
- c) Attach short HV connector (Dwg. B251376) to waterjacket stud.

d) Follow 4CW100,000E steps d) through h).

D. Final Preparation

1. Release top-plate clamp.
2. Lower the plate line.
3. Carefully guide blocker fingers onto shroud adapter.
4. Continue to lower plate line until its travel stops.
5. Raise plate line slightly to release weight on HV connector.
6. Insert 3/32-inch pin or Allen wrench into 4th hole behind blocker-clamp access port (bottom of blocker). This pin keeps clamp ring from sliding away while tightening.
7. Holding pin in place, tighten the clamp ring using a long 3/16-inch Allen wrench inserted through access port.
8. Remove pin.
9. Tighten top-plate clamp.
10. Adjust plate-short tuning to position for 52.88 MHz using front-panel switch. The nominal dimensions measured from socket deck to bottom of plate short are as follows:

| | |
|-------------|----------------|
| 4CW100,000E | 28-3/32 inches |
| Y567B | 28-7/16 inches |
11. Remove hoist line and safety hook from rope sling.
12. Plug HV connector into top receptacle.
13. Install front panel.
14. Turn on forced-air cooling for both cavity compartments.
15. Cavity is now ready for operation.

E. Tube Removal

1. Reverse "Final Preparation" (D.), Items 15 through 1.

2. Reverse "Tube Installation" (C.), for correct tube type, Items n) through a). When reversing Item j) loosen clamp nut until audible "thump" is heard as thread of clamp nut releases.